

(19)



(11)

EP 2 047 850 A3

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3:

29.07.2009 Bulletin 2009/31

(51) Int Cl.:

A61K 31/426 ^(2006.01) **A61K 31/167** ^(2006.01)
A61P 33/00 ^(2006.01) **A61P 33/02** ^(2006.01)
A61P 31/12 ^(2006.01) **A61P 31/04** ^(2006.01)
A61P 35/00 ^(2006.01) **A61P 29/00** ^(2006.01)

(43) Date of publication A2:

15.04.2009 Bulletin 2009/16

(21) Application number: **08170730.9**

(22) Date of filing: **12.04.2006**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

(30) Priority: **12.04.2005 US 670226 P**

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:

06749878.2 / 1 871 365

(71) Applicant: **Romark Laboratories, L.C.**
Tampa, FL 33607 (US)

(72) Inventor: **Rossignol, Jean-François**
St. Petersburg, FL 33710 (US)

(74) Representative: **Warcoin, Jacques et al**
Cabinet Régimbeau
20, rue de Chazelles
75847 Paris Cedex 17 (FR)

(54) **Methods for treating diseases through inhibition of the function of molecular chaperones such as protein disulfide isomerases , pharmaceutical compositions comprising them, and screening methods for identifying therapeutic agents**

(57) A method of treating an infectious disease caused by a pathogen comprising administering to a subject in need thereof an effective amount of one or more compounds that inhibit the function of a molecular chap-

erone, wherein said compound is other than tizoxanide or nitazoxanide.

EP 2 047 850 A3



EUROPEAN SEARCH REPORT

Application Number
EP 08 17 0730

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 95/25788 A (RES DEV FOUNDATION [US]; BROWN DENNIS T [US]) 28 September 1995 (1995-09-28) * claims 18,19 *	1-4,20,21	INV. A61K31/426 A61K31/167 A61P33/00
Y	* page 7, lines 4-15 *	1-10,17-21,25	A61P33/02 A61P31/12 A61P31/04 A61P35/00 A61P29/00
X	FR 2 826 018 A1 (INST PASTEUR DE TUNIS [TN]) 20 December 2002 (2002-12-20) * claims 26-30 *	1-4,17-21	
Y	* page 32, line 24 - page 34, line 26; example 4 *	1-10,17-21,25	
X	WO 98/24887 A (HESKA CORP [US]) 11 June 1998 (1998-06-11) * claims 70,71 *	17-19	
X	US 5 935 591 A (ROSSIGNOL JEAN-FRANCOIS [US] ET AL) 10 August 1999 (1999-08-10) * the whole document *	1-10,19-21	
X	US 5 578 621 A (ROSSIGNOL JEAN-FRANCOIS [US]) 26 November 1996 (1996-11-26) * the whole document *	1-10,19-21	TECHNICAL FIELDS SEARCHED (IPC) A61K A61P
E	EP 1 792 898 A (MITSUBISHI PHARMA CORP [JP]) 6 June 2007 (2007-06-06) * claims 10-21 * * abstract *	20,21	
P,X	& WO 2006/025490 A (MITSUBISHI PHARMA CORP [JP]; SUZUKI TSUYOSHI [JP]; FUJII AKIHIRO [JP];) 9 March 2006 (2006-03-09)	20,21	
P,X	WO 2006/031566 A (ROMARK LAB LC [US]; ROSSIGNOL JEAN FRANCOIS [US]) 23 March 2006 (2006-03-23) * claims 20,21 *	1-10,20,21,25	
----- -/--			
7 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 March 2009	Examiner Herrera, Suzanne
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.02 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 08 17 0730

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
E	WO 2006/042195 A (ROMARK LAB LC [US]; ROSSIGNOL JEAN-FRANCOIS [US]) 20 April 2006 (2006-04-20) * the whole document *	1-10, 19-21,25	
P,X	----- ESPOSITO MARCO ET AL: "In vitro efficacies of nitazoxanide and other thiazolides against Neospora caninum tachyzoites reveal antiparasitic activity independent of the nitro group." ANTIMICROBIAL AGENTS AND CHEMOTHERAPY SEP 2005, vol. 49, no. 9, September 2005 (2005-09), pages 3715-3723, XP002446035 ISSN: 0066-4804 * abstract * * figure 1 *	1-10, 17-21,25	
P,X	----- MULLER J ET AL: "In vitro effects of thiazolides on Giardia lamblia WB clone C6 cultured axenically and in coculture with Caco2 cells" ANTIMICROBIAL AGENTS AND CHEMOTHERAPY 2006 UNITED STATES, vol. 50, no. 1, 2006, pages 162-170, XP002446036 ISSN: 0066-4804 * abstract * * table 1 *	1-10, 17-21,25	
----- -/--			TECHNICAL FIELDS SEARCHED (IPC)
<p>7 The present search report has been drawn up for all claims</p>			
Place of search Munich		Date of completion of the search 10 March 2009	Examiner Herrera, Suzanne
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)



EUROPEAN SEARCH REPORT

Application Number
EP 08 17 0730

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
P,X	<p>PANKUCH GLENN A ET AL: "Activities of tizoxanide and nitazoxanide compared to those of five other thiazolides and three other agents against anaerobic species." ANTIMICROBIAL AGENTS AND CHEMOTHERAPY MAR 2006, vol. 50, no. 3, March 2006 (2006-03), pages 1112-1117, XP002446037 ISSN: 0066-4804 * abstract * * figure 1; tables 1,2 * -----</p>	1-10, 17-21,25	
			TECHNICAL FIELDS SEARCHED (IPC)
<p>7 The present search report has been drawn up for all claims</p>			
Place of search Munich		Date of completion of the search 10 March 2009	Examiner Herrera, Suzanne
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.82 (P04C01)



Application Number

EP 08 17 0730

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

see annex

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**Application Number
EP 08 17 0730

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-10, 17-21,25

Treatment of infectious diseases through inhibition of a
molecular chaperone

2. claims: 11-12,22,26

Treatment of inflammation diseases through inhibition of a
molecular chaperone

3. claims: 13-14,23,27

Treatment of autoimmune diseases through inhibition of a
molecular chaperone

4. claims: 15-16, 24,28

Treatment of cancer through inhibition of a molecular
chaperone

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 17 0730

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-03-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9525788	A	28-09-1995	AU 688887 B2	19-03-1998
			AU 2191395 A	09-10-1995
			CA 2186044 A1	28-09-1995
			CN 1144536 A	05-03-1997
			EP 0755440 A1	29-01-1997
			FI 963717 A	20-11-1996
			IL 112990 A	30-11-1999
			JP 3821484 B2	13-09-2006
			JP 9510613 T	28-10-1997
			NZ 283575 A	30-03-2001
			RU 2194754 C2	20-12-2002
			US 5532154 A	02-07-1996
			ZA 9502259 A	20-09-1996
FR 2826018	A1	20-12-2002	AU 2002345672 B2	29-05-2008
			AU 2008203830 A1	11-09-2008
			BR 0210486 A	17-08-2004
			CN 1526017 A	01-09-2004
			CN 101274960 A	01-10-2008
			CZ 20033430 A3	12-05-2004
			EP 1414967 A2	06-05-2004
			WO 02103002 A2	27-12-2002
			HR 20031046 A2	30-04-2004
			HU 0400204 A2	28-04-2005
			JP 2004537299 T	16-12-2004
			MX PA03011904 A	01-07-2005
			NZ 530459 A	30-04-2008
			PL 367113 A1	21-02-2005
			YU 99603 A	25-05-2006
			ZA 200309739 A	12-10-2004
WO 9824887	A	11-06-1998	AU 6236898 A	29-06-1998
			CA 2272848 A1	11-06-1998
			EP 0950092 A2	20-10-1999
			JP 2001505436 T	24-04-2001
			US 6414115 B1	02-07-2002
			US 6248872 B1	19-06-2001
US 5935591	A	10-08-1999	US 6309644 B1	30-10-2001
			NONE	
US 5578621	A	26-11-1996	US 5859038 A	12-01-1999
EP 1792898	A	06-06-2007	CA 2577928 A1	09-03-2006
			CN 101010304 A	01-08-2007
			WO 2006025490 A1	09-03-2006

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 08 17 0730

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-03-2009

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1792898 A		KR 20070058529 A	08-06-2007
		US 2008200433 A1	21-08-2008
-----		-----	-----
WO 2006025490 A	09-03-2006	CA 2577928 A1	09-03-2006
		CN 101010304 A	01-08-2007
		EP 1792898 A1	06-06-2007
		KR 20070058529 A	08-06-2007
		US 2008200433 A1	21-08-2008
-----		-----	-----
WO 2006031566 A	23-03-2006	AU 2005285157 A1	23-03-2006
		BR PI0515089 A	08-07-2008
		CA 2580347 A1	23-03-2006
		CN 101035531 A	12-09-2007
		EP 1789040 A2	30-05-2007
		JP 2008512474 T	24-04-2008
		KR 20070052330 A	21-05-2007
		ZA 200702066 A	27-08-2008
-----		-----	-----
WO 2006042195 A	20-04-2006	US 2006194853 A1	31-08-2006
-----		-----	-----